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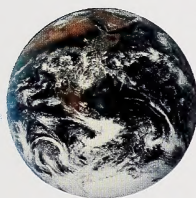
CLIMATE Change

challenge

Alberta

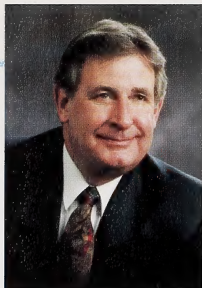
TAKING ACTION

NOW



Global climate change is a priority for Albertans. Business, industry, research organizations, universities, environmental organizations and government are working in partnerships at home and around the world to respond effectively to the challenge of climate change.





RALPH KLEIN
PREMIER OF ALBERTA



GARY MAR
MINISTER OF ENVIRONMENT

Our Message

Climate change concerns all Canadians. Alberta has accepted the challenge of reducing greenhouse gas emissions, and is a Canadian leader in taking action.

As the provincial economy continues its robust growth, the growth rate of Alberta's greenhouse gas emissions is falling. Alberta industries and businesses are exploring technologies that are reducing their emissions, and are exporting their innovations and expertise around the world.

The list of achievements is impressive and growing. Recognizing the positive impact these actions have on its economy and quality of life, Alberta makes a commitment to continuing leadership on climate change in our new economic strategy to 2005.

There is one earth, one sun, and one atmosphere between them. Seen from space, the globe has no national boundaries. The difference Alberta makes will have an impact around the world.

The Alberta Advantage is about leadership. Taking action on climate change is part of that leadership.

Premier Ralph Klein

The one constant in Alberta's approach to climate change is partnership. Industry is collaborating with academia. Communities are working with developers. The Alberta government seeks broad participation, and works with governments across Canada to address policy issues. The province as a whole contributes to Canada's national effort.

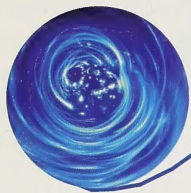
At the government and industry sponsored Climate Change Round Table in 1999, Albertans from across the province called for a provincial co-ordinating organization. Climate Change Central is that organization.

This is an action-oriented partnership of industry, environmental groups, municipalities, concerned citizens and government. Together, we will develop workable strategies, create opportunities for education, build our capacity for change, and develop the technologies that will be the tools for change.

There is no neutrality on the issue of climate change. There can be no spectators. Every Alberta energy producer and energy user is a participant. Join our partnership, and be part of the solution.

Gary Mar

A Priority for Alberta



"And here, I want to pay a particular tribute to Alberta and Albertans. In a great many ways, you are leading the pack. You are making the greatest single effort, you're bringing the most intellectual capital to the table, and you're making the biggest difference for the better."

*-Natural Resources Canada Minister Ralph Goodale,
Alberta Climate Change Round Table, April 30, 1999*

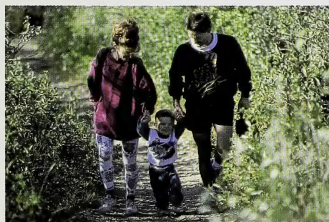
Alberta is not waiting for developments on other fronts; it is taking action now on global climate change.

We are providing cleaner energy to the world, which helps reduce global emissions. Our resource industries are experts in emission reductions and are exporting these technologies around the globe. Key partnerships capitalize on local and global opportunities.



- We are a world leader in fostering new independent electrical generation using leading-edge technologies and renewable fuel sources to reduce emissions.

- Continued leadership on climate change is part of the Alberta government's new economic strategy. An integrated resource strategy recognizes the environmental impact of growth.



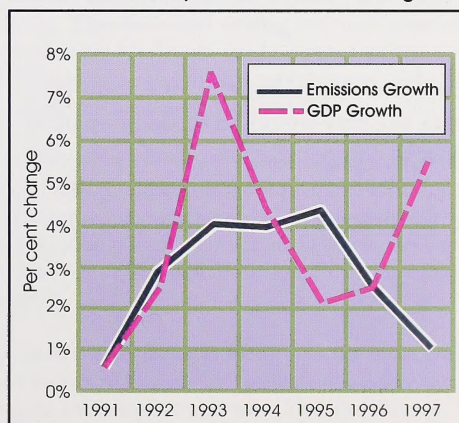
- Alberta industry, led by the resource sector, is a Canadian leader in reducing greenhouse gas emissions. The Alberta government leads by example with one of the most effective emission reduction programs in Canada.

- Albertans realize global climate change is a real and serious issue and are committed to co-operative action. Government and stakeholder partnerships are building on that commitment with education and community action programs.

The results are evident. Industry and government actions have helped reduce the growth of provincial greenhouse gas emissions. In 1997 (the last year for which complete statistics are available), emissions were only one per cent above 1996 levels, despite a growing provincial economy. *See Figure, this page.*

Alberta expects this trend to continue. The challenge will require increasing commitment and creativity as we build on our partnerships, innovations, technologies and other achievements.

Alberta's Unique Emissions Challenge



A World Energy Centre

Alberta is Canada's energy province, with more than half the country's conventional reserves, more than 90 per cent of its natural gas, and the largest contiguous bitumen and oil sands reserves in the world.

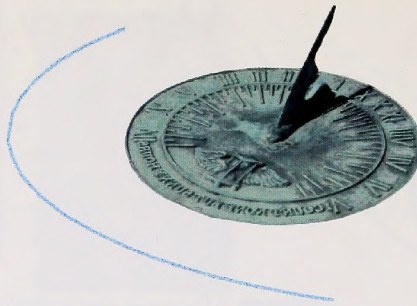
In 1997, direct emissions from this huge oil and gas sector accounted for nearly 27 per cent of Alberta's total greenhouse gas emissions. This comes in addition to emissions from energy related transportation, electrical production and other associated industrial processes.

As a result, the oil and gas industries are key players in reducing greenhouse gas emissions. For example, companies such as Syncrude and Suncor Energy spent hundreds of millions of dollars on technologies that reduced their carbon dioxide (CO₂) emissions by more than 22 and 23 per cent per barrel, respectively. Both companies forecast further reductions of more than 35 per cent.

Alberta's resource industry is exporting its leading edge technologies around the world, reducing global emissions.

Alberta natural gas also helps reduce global emission levels, even though production emissions are part of Alberta's inventory. About half the gas produced in Alberta is delivered to markets in the U.S. These markets prefer it to more carbon intensive fuels, because it lowers CO₂ emissions and helps address other local air quality issues.

The environmental benefits of actions by the Alberta industry would be eroded if market share is lost to competitors in countries that do not have standards and environmental management practices as rigorous as those in Alberta.



A Unique Partnership Takes Action



Climate Change Central is a unique partnership that brings together industry and other stakeholder organizations with government to take effective action on climate change. Premier Ralph Klein announced its formation in November 1999 to implement the key directions and recommendations of Alberta's Climate Change Round Table.

- ✓ **The Climate Change Round Table**, which brought together a cross-section of Alberta's private and public sectors, concluded unanimously that action is essential to reduce risks from an environmental and economic perspective. No one group or segment of Alberta's society or economy can take sole responsibility. We are all in it together.

Climate Change Central is a catalyst for governments, municipalities, businesses, institutions, non-governmental organizations and individuals to focus on:

- **Strategy:** developing short and long term strategies that encourage innovative, creative solutions and co-ordinated actions.
- **Education and building capacity:** expanding public awareness and participation, working to lower greenhouse gas emissions while strengthening Alberta's economy and long term competitiveness.
- **Technology:** developing, using and marketing new technologies and processes.

Premier Ralph Klein is the executive chair of Climate Change Central. Environment Minister Gary Mar and David A. Tuer, President and CEO of PanCanadian Petroleum Limited, are the co-chairs.

For more information visit www.climatechange.gov.ab.ca

Technology Strategy Fosters Innovation

Through Climate Change Central, Alberta companies are working with government and academia on technological advances that often lead to higher profits and lower environmental impacts.

In the resource industry, in particular, new technologies and innovation provide boundless opportunities to improve competitiveness, discover and develop new resources, further diversify the economy and increase value added activities. Alberta firms are leaders in developing and adapting environmentally responsible technologies and marketing this expertise to the rest of the world.

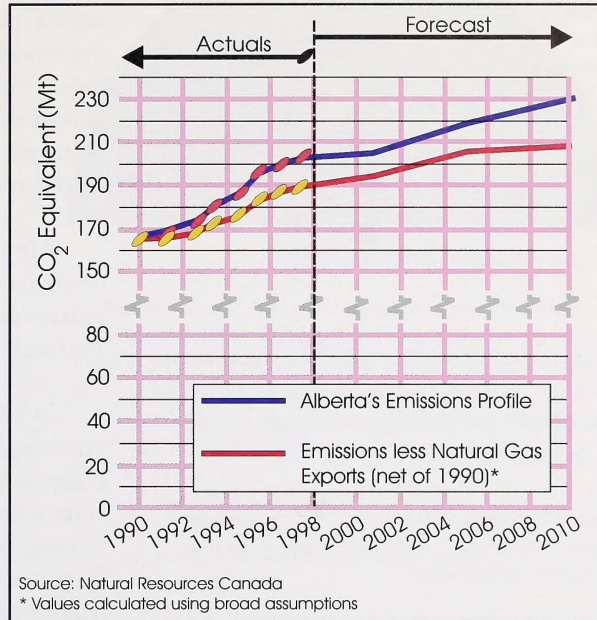
Alberta's Technology Strategy for the Management of Greenhouse Gas Emissions fosters these activities. It has two main objectives:

- Ensure effective development of technologies within Alberta to mitigate greenhouse gas emissions.
 - Capitalize on global opportunities for exporting climate-friendly technology solutions developed and adapted here.
- ✓ **Carbon management.** Government and industry are working on initiatives for capturing and disposing of CO₂ in sites, such as depleted oil wells. Participants agree any such system must be proven safe, environmentally benign, effective, economical and publicly acceptable.

One innovative project involves injecting CO₂ into very deep coalbeds. The CO₂ pushes out methane (natural gas) from the coalbeds to be recovered and used.

- ✓ **Sinks.** Agricultural soils and forestry CO₂ sinks are now being considered in international negotiations. Alberta scientists and other public and private sector staff played a major role in understanding agricultural sinks. Sinks remove greenhouse gases from the atmosphere, by converting them through chemical processes or storing them in some other form.

Alberta's Greenhouse Gas Emissions



International Synergies Help Emerging Markets

Alberta companies are applying their efficient practices and technologies in international markets. This results in more business for the company, and improved environmental quality and energy efficiency in the host country.

- ✓ **Natural gas pipeline improvements.** TransCanada's pilot initiative is assessing five hot-connection techniques used on a natural gas pipeline in Chile. The specialized welding and cutting technique (hot tapping), pioneered by TransCanada, reduces methane emissions by limiting the need to vent natural gas to the atmosphere when new lines or taps are added.
- ✓ **Workshops.** The Alberta government is sponsoring a series of one day workshops highlighting important developments in international climate change negotiations. These workshops provide Alberta industry with information on how it can benefit and become involved. The initial focus is on firms doing business in Latin America.
- ✓ **Milk improvements.** TransAlta is working with the India Dairy Development Project to increase the quality and quantity of milk by improving the cattle digestion process. This also reduces emissions of methane gas from the cows.

Effective Actions by Organizations and Industry

"The leadership of the private sector in this province is really something quite extraordinary."

*-Natural Resources Canada Minister Ralph Goodale,
Alberta Climate Change Round Table, April 30, 1999*

Industry, academia and environmental organizations, often working collaboratively with government, have responded effectively to climate change issues through local, regional, provincial, national and international perspectives.

These stakeholders are helping to shape national climate change policies and programs, to reflect the unique challenges and opportunities faced by each province and sector.

- ✓ **Applause.** The federal Minister of the Environment applauded Alberta as: "... probably having the best understanding of the issue."
- ✓ **Leadership.** The Alberta and federal governments are co-chairs of the National Climate Change Process. Alberta stakeholders have been active participants in all 15 national tables dealing with climate change issues. *Please see the chart on the back cover detailing Alberta's involvement.*
- ✓ **Global Sustainability Index.** The new Dow Jones Sustainability Index includes energy efficiency, cleaner technologies and closed loop production among its criteria. The index identified four Canadian companies as international leaders in their respective fields; three are from Alberta: Enbridge Inc., TransAlta and Suncor Energy.
- ✓ **New market mechanisms.** Alberta companies are leaders in piloting international actions to explore new market mechanisms such as emissions reduction trading.

Emissions reduction trading is a new cost effective mechanism to achieve greenhouse gas reductions. It gives organizations a market based incentive. Companies that reduce emissions at the lowest cost per unit can sell excess emission reductions to companies with the highest per unit cost. The result meets overall emission reduction targets with maximum flexibility and least cost.

Although detailed procedures have yet to be developed, Alberta stakeholders are pursuing proactive initiatives to demonstrate the effectiveness of this approach.

In October 1999, Suncor Energy of Alberta purchased 100,000 tonnes of emission reductions from Niagara Mohawk Power, to offset Suncor's corporate emissions, principally from oil sands operations in Alberta. Suncor has an option to buy a further 10 million tonnes of future reductions. Niagara Mohawk was able to sell the reductions because energy improvements to one of its coal-fired stations in New York significantly lowered CO₂ emissions.

"These two pioneering companies—one American, the other Canadian—are showing that ingenuity and entrepreneurial spirit can meet the challenge of climate change. Through this private sector transaction, Suncor can cut emissions for far less cost, and Niagara Mohawk can achieve significant earnings that it plans to invest in further clean energy projects."

-U.S. Vice President Al Gore

- ✓ **Alberta industry, government and environmental groups** participate in the Greenhouse Gas Emission Reduction Trading (GERT) pilot program. The pilot is a federal/provincial initiative to examine the feasibility of emission reductions trading and encourage early emission reduction projects. Twelve such projects have been posted to the GERT web site (www.gert.org), totaling more than 792,000 tonnes of annual CO₂ emission reductions.



Industry Takes Innovative and Effective Actions

Many Alberta companies are leading the country in innovative ways of reducing or mitigating greenhouse gas emissions. A growing number of companies are considering future constraints on greenhouse gas emissions when planning operations and making investment decisions.

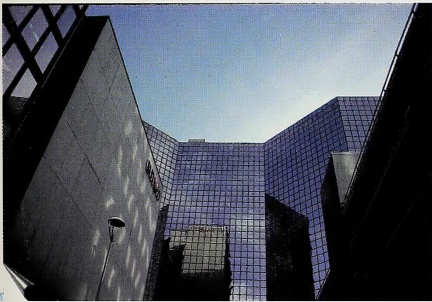
Over 180 Alberta companies and organizations participate in the national Voluntary Challenge and Registry (VCR). Members establish effective action plans to reduce emissions and issue regular progress reports.

Under the VCR initiative, the oil and gas industry reduced its annual emissions from 1994 to 1997 by 10 million tonnes of CO₂ equivalent.



✓ **Awards.** Eleven Alberta organizations or individuals received national Voluntary Challenge Leadership Awards in March 2000 for their contributions to greenhouse gas reductions:

- EPCOR
- Glenrose Rehabilitation Hospital and Energy Centre
- Koch Oil Company Ltd.
- Luscar Ltd.
- Mobil Canada
- NOVA Chemicals
- Rocky View School Division No.41
- Shell Canada
- Suncor Energy
- TransCanada
- John Donner, Alberta Environment, Government of Alberta



Alberta Government Leading by Example

The Alberta government leads by example on climate change to demonstrate the effectiveness and importance of voluntary action—and get the Alberta government house in order at the same time.

Alberta municipalities, large and small, are also taking voluntary action to reduce their greenhouse gas emissions.

- ✓ **Progress.** By 1998, the Alberta government had reduced its greenhouse gas emissions to 17.3 per cent below 1990 levels. This exceeded the emission target set out in the action plan in both quantity and time. The government focused on three key areas: buildings, waste and the transportation fleet.
- ✓ **Retrofits.** A program is underway to audit all 342 government buildings over 1,000 square meters and follow up with cost effective retrofits.

Artist's rendering



Hinton centre demonstrates how collaboration can achieve environmental objectives

The Town of Hinton is building an energy-efficient government centre that will cut greenhouse gas emissions by half. Manasc Isaac Architects Ltd. designed the building so operating cost reductions will offset the capital costs.

Environmental benefits include reduced water consumption, minimum tree cutting for the building and roads, use of cut trees as building and site materials, and reuse of topsoil and seed material removed during construction to re-establish native ground cover plants. Daylight will provide as much light as possible, and windows will open. Carefully selected building materials will improve indoor air quality. A raised floor system will allow individual temperature and ventilation control and provide greater flexibility for future space changes.

As a co-tenant, the Alberta government participated in financing, design and construction. This involved identifying and overcoming a number of barriers, such as changing leasing requirements. By working collaboratively, municipal and provincial governments were able to achieve environmental objectives in a cost effective manner.

- ✓ **Leadership.** The Alberta government's leadership through voluntary action has been recognized through awards such as the Gold Level Reporter designation for achieving the most stringent reporting guidelines. Alberta also received the national VCR Leadership Award in 1999 for submitting the top government action plan.
- ✓ **Education.** The CO₂ Diet Program encourages Alberta government staff to take personal action to reduce greenhouse gas emissions at work and at home. The pilot program involves educational sessions for Environment and Resource Development staff.



GoldTM
Champion
Level Reporter

Green Power and Other Electricity Solutions

Alberta is a North American leader in restructuring its electric industry. Innovative, environmentally friendly forms of generation now compete with traditional sources such as coal-fired generators. The industry encourages greater use of natural gas and cogeneration—the combined production of energy and useful heat—in electrical generation.

Restructuring means independent power producers world-wide can build new power facilities using efficient turbine technologies to produce lower emissions. Since restructuring, more than 2,000 megawatts of new, highly efficient cogeneration capacity has been built or announced.

- ✓ **Renewable resources.** ENMAX is offering Calgary customers power from wind turbines in southwestern Alberta. EPCOR, which serves Edmonton, is offering blocks of energy generated from low impact/renewable sources such as biomass.
- ✓ **Using "waste" natural gas.** Solution gas is now being used for electrical generation in Alberta. With permission, producers used to flare (burn off) this uneconomic gas, which released greenhouse gases and other emissions. Now, efficient micro-turbines can use these small volumes of solution gas to generate electricity. The Alberta government encouraged this development by waiving the royalty on solution gas for which the company is able to find a use.



Photo supplied from VisionQuest



Effective Actions in Communities

The Alberta government is working with a variety of partners to highlight the role individuals and communities can play in responding to climate change.

- ✓ **Information and tools.** The Eco-Efficient Communities Initiative, developed by the Clean Air Strategic Alliance (CASA), provides municipalities with the practical information and tools to reduce operational costs, create local jobs and reduce greenhouse gas emissions. Designed for small and mid sized communities, the program, delivered by the Pembina Institute, offers a range of project materials, workshops and conferences that are available to any local government interested in doing more with less.
- ✓ **Pilot initiative.** Kikino Metis Settlement in northeastern Alberta is the focus of a pilot project to identify greenhouse gas reduction opportunities and encourage action. The Alberta government and partners that include the Kikino Metis Settlement, TransCanada, Alberta Pacific Forest Industries Ltd. and the federal government are working together to help shape future community engagement initiatives in other Alberta communities.
- ✓ **Online resource.** The Pembina Institute, a non-governmental environmental institution, worked with government, industry and environmental organizations to create a web site called Climate Protection Solutions (CPS) (www.climatechangesolutions.com). The site features Canadian success stories, opportunity areas, tools and resources to reduce greenhouse gas emissions. It is the first resource to provide this detailed information on the economic and environmental benefits of greenhouse gas success stories across a broad range of sectors. It helps turn inspiration into action.

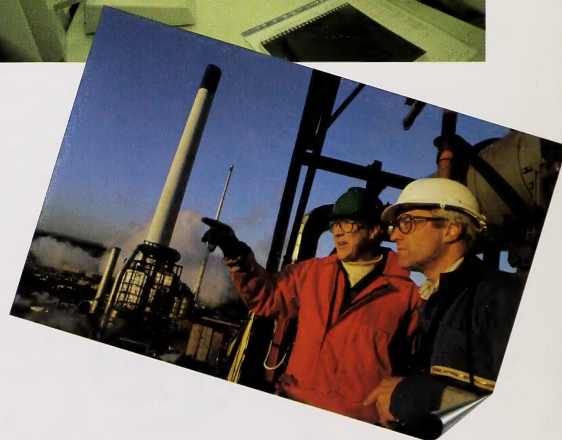
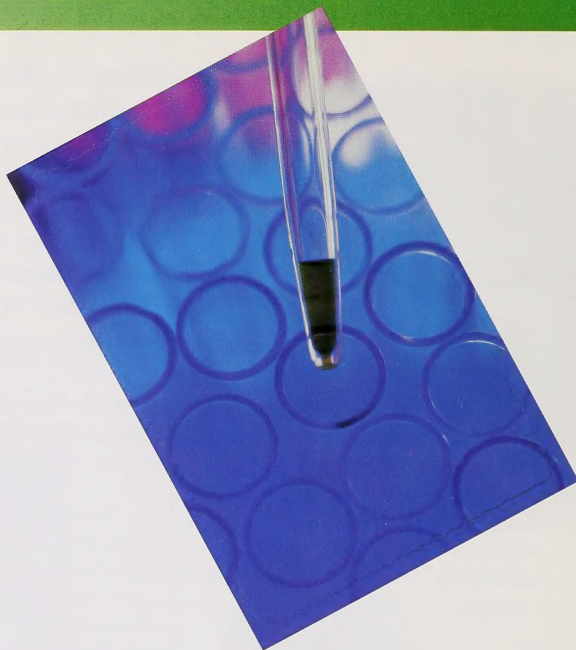


Educating Albertans

"We will engage Albertans in promoting and developing best practices as well as educating the public and industry." - Alberta Strategy

The Alberta government is working closely with educators, environmental groups, industry and other levels of government to help Albertans understand climate change, its impacts and associated environmental, economic and social issues. These programs are recognized in other parts of the country as models for climate change education.

- ✓ **Personal actions.** Alberta organizations such as Enbridge Inc., Shell Canada, Syncrude, Suncor Energy, and TransCanada, as well as the provincial government, are working with Action by Canadians (ABCs), an initiative of the Energy Council of Canada. The ABCs include seminars, personal action exercises and tools that provide climate change information as well as personal action exercises and tools to help staff in Canadian organizations reduce greenhouse gas emissions. Participants are encouraged to make pledges to reduce their emissions and report after six months, and then annually, on what they have achieved.
- ✓ **Teacher's programs.** Climate Changes is a school-based program involving 1,000 teachers over three years. It is led by FEESA-An Environmental Education Society, and Destination Conservation. Curriculum materials are available for elementary, junior high and senior high school science and social studies programs. Teachers participate in professional development workshops about climate change.
- ✓ **Video resource.** The SEEDS (Society, Environmental and Energy Development Studies) Foundation is developing an interactive video resource, with a teacher's resource guide, for senior high school teachers.
- ✓ **School retrofit.** Destination Conservation enrolls school jurisdictions in a retrofit program. Students, teachers and other school staff audit their school's energy consumption and develop plans to reduce consumption through retrofits and lifestyle changes. Students monitor the progress.



Effective Action in Agriculture



The Alberta Environmentally Sustainable Agriculture Program is funded at \$5 million a year by Alberta Agriculture, Food and Rural Development (www.agric.gov.ab.ca/sustain/aesaprog.html). This program is helping to develop and encourage farming practices that can lead to lower greenhouse gas emissions. The program also supports research to find cost-effective ways to reduce greenhouse gas emissions from agriculture and agri-food business.

- ✓ **Awareness.** The Alberta Food Processors Association (AFPA) is accelerating adoption of energy efficient practices through the Greenhouse Gas Awareness Project. The AFPA uses case studies to highlight leading-edge energy efficient activities. Funding was provided under the Alberta Environmentally Sustainable Agriculture Program.





Alberta's Involvement in the National Climate Change Process



For More Information

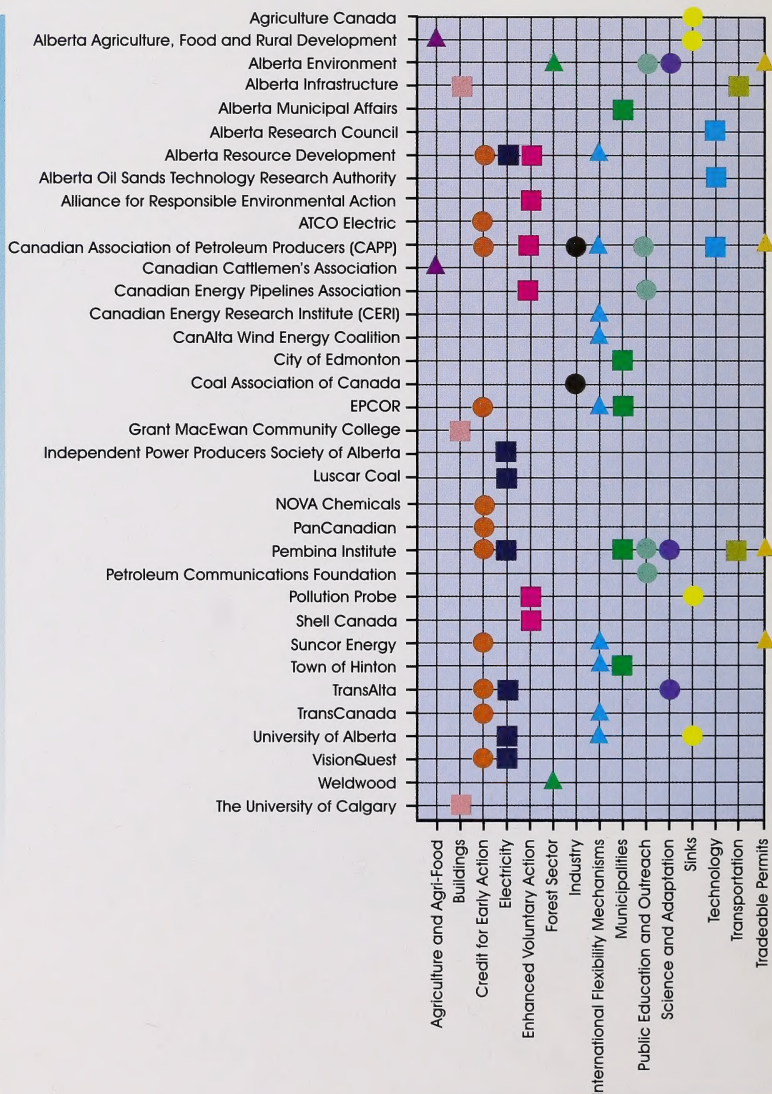
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Organization



National Issue Table